

REMARKS

This paper is being provided in response to the Office Action mailed October 9, 2009, for the above-referenced application. In this response, Applicant has amended claims 4, 6, 7 and 15 to clarify that which Applicant considers to be the presently-claimed invention. Applicant respectfully submits that the amendments to the claims are fully supported by the originally-filed specification, consistent with the discussion herein.

The rejection of claims 4, 6, 7, 15 and 18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,614,422 to Rafii, et al. (hereinafter "Rafii") in view of U.S. Patent No. 7,263,547 to Kloba (hereinafter "Kloba") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

Independent claim 4, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means performs a predetermined data process based on the detection result of operation detected by the operation detection means. Application execution management means manages execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a

recognition function corresponding to the selected predefined operation-plane image. The image projection means projects the selected predefined operation-plane image corresponding to recognition function designated by designation information received from the application execution management means, from among the plurality of predefined operation-plane images. The operation detection means has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function designated by the designation information received from the application execution management means. Claims 12 and 13 depend directly or indirectly from independent claim 4.

Independent claim 6, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means performs a predetermined data process based on the detection result of operation detected by the operation detection means. Application execution management means manages an execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. The image

projection means projects the selected predefined operation-plane image corresponding to the recognition function designated by the designation information received from the application execution management means, from among the plurality of predefined operation-plane images. The operation detection means has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function corresponding to the operation-plane image designated by the designation information received from the application execution management means. Claims 12 and 13 depend directly or indirectly from independent claim 6.

Independent claim 7, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means for performing a predetermined data process based on the detection result of operation detected by the operation detection means. Memory means for stores a plurality of image data corresponding to each one of the plurality of operation-plane images. Application execution management means executes an application program selected from a plurality of kinds of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. Instruction

generation means generates an operation-plane image selection instruction in accordance with content of the selected application program. The image projection means selects an image data from the plurality of image data memorized in the memory based on the operation-plane image selection instruction generated by the instruction generation means, and projects the operation-plane image of the selected image data. The application execution management means performs a data process corresponding to operation detected by the operation detection means in accordance with the content of the application program during execution of the selected application program and in accordance with the designation information that designates the recognition function. Claims 12 and 13 depend directly or indirectly from independent claim 7.

Independent claim 15, as amended herein, recites a mobile communication terminal. An image projector projects a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device. An operation detector detects operation on the operation-plane image projected by the image projector. A data processor performs a predetermined data process based on the detection result of operation detected by the operation detector. An application execution management device manages an execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management device selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. The image projector projects an operation-plane image corresponding to the recognition function designated by the designation information received from the application

execution management device, from among the plurality of predefined operation-plane images. The operation detector has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function designated by the designation information received from the application execution management device. Claims 16-18 depend from independent claim 15.

Rafii discloses a method and apparatus for entering data using a virtual input device. A user inputs digital data to a companion system using a virtual input device and a sensor captures three-dimensional positional information as to location of the user's fingers in relations to where keys would be on an actual keyboard. The Office Action cites principally to col. 4, lines 27-33, col. 7, lines 16-18, col. 10, lines 27-34 and col. 12, lines 33-47 and Figs. 1A and 3 of Rafii. The Office Action (page 3) notes that Rafii does not disclose an application execution management means for managing application program execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network.

Kloba discloses a system, method and computer program product for customizing channels, content and data for mobile devices. The Office Action cites to Kloba as disclosing the feature of an application execution management means noted above as omitted from Rafii, citing specifically to col. 4, lines 37-41; col. 7, lines 5-9; and col. 11, lines 15-21 of Kloba.

Applicant's independent claims have been amended to clarify the feature of the terminal projecting a selected one of a plurality of predefined operation-plane images. In particular, Applicant recites application execution management means for managing execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. Applicant's system, in accordance with the disclosure and the present claims, provides that a plurality of projected input layouts, namely predefined operation-plane images, are pre-programmed into a device and a particular selected on those predefined operation-plane images may be selected based on the content (e.g., according to the requirements of) the application program. In addition to selecting the predefined operation-plane image based on the content, the application execution management means also generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. (See, for example, paragraphs [0008]-[0012] of the originally-filed specification). For example, for an application program that requires a virtual keyboard, the application execution management means may select an appropriate keyboard and provide appropriate designation information for other components, such as a operation detection component, to be able to correctly recognize and operate with the movements of user that is using the predefined operation-plane image of the keyboard. Alternatively, for example, for an application program that requires a musical instrument keyboard (such as a piano), then the application execution management means selects the appropriate predefined operation-plane image and generates the appropriate designation

information for a recognition function to provide suitable operation of the system. Other predefined operation-plane images may include game controllers and/or 3D input layouts and for which the system described herein may be provide appropriate selection, projection and operation features based on the content (requirements) of the application program (See, for example, paragraphs [0018], [0052] of the originally-filed specification).

Applicant's recited system provides that advantageous result that application developers do not need to design the whole input layout themselves, but instead may select one of the predefined operation-plane images, out of a plurality of predefined operation-plane images, as a pre-programmed input layout according to content of an application program for which the presently-recited system is being used with. By having the input layouts pre-programmed into the device, the application/applet developer does not need to design and integrate image layouts into their software, thus reducing the development time and complexity. This is especially advantageous for fast-to-market, low-cost mobile applications which predominantly have low development budgets and need a high degree of compatibility, reliability and ease of use. (See, e.g., pages 6-8 of the originally-filed specification.)

Applicant respectfully submits that the cited prior art does not teach or fairly suggest at least Applicant's above-noted features. The Office Action has noted that Rafii does not disclose an application execution management means like that recited by Applicant. Accordingly, Applicant notes that Rafii's system does not provide a system that operates according to that recited by Applicant, specifically in which an application execution management means may select an appropriate predefined operation plane image nor generate designation information

according to that recited by Applicant. Applicant specifically addresses, and traverses, below the citation to Kloba with respect to this omitted feature from Rafii and particularly in accordance with amendments to claims contained herein; however, Applicant's initially point out that since Rafii does not disclose or provide for the selection and operation of predefined operation-plane images (specifically a selected predefined operation-plane image out of a plurality of predefined operation-plane images) by an application execution management means according to content of an application program, attempting to combine Rafii with an application execution management means would not adequately instruct one of ordinary skill in the art of the use of an application execution management means according to that recited by Applicant. Notwithstanding this point, however, Applicant specifically submits, as discussed below, that the application execution management means cited in Kloba by the Office Action does not disclose an application execution management means having the features recited by Applicant.

Specifically, Applicant notes that Applicant's application execution management feature is made a practical possibility by the feature of the plurality of predefined operation-plane images because the downloaded applications need not contain instructions for generating a custom operation-plane image on a communications terminal, thereby significantly reducing the download file size. Accordingly, Applicant submits that the citation to an application execution management means in Kloba does not overcome the above-noted deficiencies of Rafii with respect to the use of a plurality of predefined operation-plane images by the mobile communications terminal according to that which is recited by Applicant. The cited portions of Kloba disclose features of a mobile device interacting with the Internet, including the downloading of content, application services, images, movies, music, links, etc. according to

operation using an application programming interface. However, such disclosure is a somewhat generic disclosure of Internet downloading functionality that does not teach or fairly suggest the features for an application program execution management means like that presently recited by Applicant that manages the execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network that specifically selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. Applicant then further notes that use of the selected predefined operation-plane image and the designation information generated by the application execution management means in connection with the other components as recited by Applicant. Applicant points out that the above-noted features recited by Applicant appear distinct in structure and operation from the basis for the stated motivation to combine Kloba with Rafii that appears on page 4 of the Office Action: "the suggestion/motivation for doing so would have been to enable the user to run multiple applications on a mobile device while on-line or off-line (Kloba, col. 1, ll. 36-39)".

Accordingly, Applicant submits that an "application execution management means" like that cited in Kloba involving a downloading interface of a mobile device with the Internet does not overcome the above-noted deficiencies of Rafii with respect to Applicant's presently-claimed invention. Applicant respectfully submits that Rafii and Kloba, taken alone or in combination, do not teach or fairly suggest at least the above-noted features as recited by Applicant. In view of the above, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claim 12, 13, 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Rafii in view of Kloba and further in view of U.S. Patent App. Pub. No. 2002/0075240 to Lieberman (hereinafter "Lieberman") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

The features of independent claims 4, 6, 7 and 15 are discussed above with respect to Rafii and Kloba. Claims 12, 13, 16 and 17 depend therefrom.

Lieberman discloses a virtual data entry device and method for input of alphanumeric and other data. The Office Action cites to Lieberman as disclosing features of use of a light source, a spatial light modulation unit and an optical system, as recited by Applicant in claim 12, citing specifically to paragraphs 0184, 0186, 0135 and Figs. 28 and 29 of Lieberman.

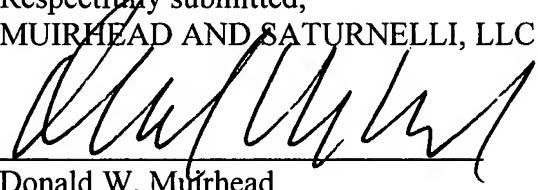
Applicant respectfully submits that the addition of Lieberman does not overcome the above-noted deficiencies of Rafii and Kloba with respect to the presently-claimed invention. Lieberman does not disclose, nor is Lieberman cited in the Office Action in connection with, Applicant's recited features that are discussed above with respect to Rafii and Kloba. Accordingly, Applicant respectfully submits that Rafii, Kloba and Lieberman, taken alone or in any combination, do not teach or fairly suggest at least the above-noted features as recited by Applicant. In view of the above, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

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